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What Is Competent Beginning Teaching? A Review of the Literature

Anne Reynolds
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What does it mean to be a competent beginning teacher? This review melds findings from the literature on effective teaching with those of learning to teach in order to answer this question. It begins with a discussion of problems encountered in interpreting these bodies of research. Next, differences between beginning and experienced teachers are discussed in three broad domains of teaching tasks: preactive, interactive, and postactive. In the conclusion, recommendations are offered regarding what should be measured in performance-based assessments for teacher licensure.

Sound assessments for teacher licensure are grounded in the wisdom of practicing professionals and research on teaching. It is with the research on teaching literature that this review is concerned. The crux of my argument is simply this: To build valid teacher assessments for teacher licensure, we must determine what beginning teachers should know and be able to do. A first step is to examine the similarities and differences between two bodies of research: teacher effects and learning to teach. Having done so, we are in a better position to formulate a definition of the competent beginning teacher. Such a definition can then act as a guide for the development of meaningful assessments. After discussing some of the problems encountered in interpreting research on teaching, I present a synthesis of findings from research on teacher effectiveness and on learning to teach. The final section of the article offers recommendations for what to expect of beginning teachers and suggestions for future research.

Problems in Interpreting the Literature

Four problems confront those who wish to use the effective teaching and learning-to-teach literature to determine what to expect of beginning teachers for purposes of teacher licensure:

1. Research on teacher effectiveness has largely been the province of researchers, not teachers. Therefore, what is known is not always of great use to teachers.
2. There are few empirically demonstrated relationships between student outcomes and teacher actions. What empirical evidence is available does not necessarily generalize across subject matter, grade level, students, or classroom culture.

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3. We know very little about the differences between effective beginning teachers and effective experienced teachers.
4. What we do know about teaching, as documented in the literature, may not be what we envision competent teaching to be.

For the most part, research on teaching has been conducted by researchers interested in teaching rather than by teachers interested in research. Critics of the content in the *Handbook of Research on Teaching* (Wittrock, 1986a) question the worth of the findings due to the omission of teachers' voices—the questions teachers ask and the interpretive frames they use to understand and improve their own classroom practices (Cochran-Smith & Lytle, 1990; Traver, 1987). What teachers say is important to effective teaching and what researchers have studied and think is important often differ. For example, most of the effective teaching research has centered on teacher-directed instruction and resulting student cognitive achievement on standardized tests in mathematics and reading (Brophy & Good, 1986; Gage & Needels, 1989; Good & Brophy, 1986), while more student-directed instruction, content-specific pedagogical practices, and affective outcomes have been explored less frequently. These latter issues are of significance to classroom teachers, who are immersed in the particulars of students and content. Findings from a recent study of elementary school teaching tasks (Rosenfeld, Freeberg, Reynolds, Wilder, & Bukatko, in press) sharpen this point. In the study, elementary teachers were asked to respond to statements about teaching actions in terms of their importance for the newly licensed elementary school teacher's job. Ninety-seven percent of the respondents said that it was very or extremely important for new elementary school teachers to enhance student confidence and self-esteem. Ninety-one percent said that newly licensed elementary school teachers should be able to respond to students' social and emotional needs. Although both of these affective areas are rated by educators as important for the beginning elementary school teacher's job, research tells us little about the nature of the relationship between performing these tasks and student achievement (Hunt, 1987).

Secondly, the teacher effects research has produced findings that are assumed to cross all subject areas and grade levels, but the studies are usually conducted in two disciplines—mathematics and reading—and in the elementary grades. This is a stumbling block for those who want to use this literature to create a more comprehensive picture of what competent teaching is. Even when context variables are considered, they may be misinterpreted due to cultural differences in value patterns, participation structures, and communication styles (Swisher & Deyhle, 1987).

Like the research on effective teaching, the learning-to-teach literature also offers few conclusions regarding what to expect of beginning teachers due to the small number of participants, the largely descriptive nature of the work, and the lack of coherence across studies (Carter, 1990; Clark & Peterson, 1986; Richardson, 1990). As Carter (1990) points out, outcomes in the learning-to-teach literature are identified in a number of ways (attitudes, dispositions, orientations, perspectives, knowledge, concerns, or commitments), and the terms are used interchangeably, regardless of their differences in meaning. Additionally, the research settings are not well described and vary widely across projects, and, for the most part, it is difficult to identify the contributions of teacher education program components or field experiences to the beginning teacher's development.

Thirdly, the relationship between the variables of experience and expertise is also problematic for giving direction to the development of teacher assessment tools. Few researchers of effective teaching have distinguished among experience levels, so we do not know for sure how far-reaching the research findings apply. In the learning-to-teach literature, study participants are usually designated as teacher education students, student teachers, or first-year teachers, but the numbers of participants are so few that they may not be representative of all teachers at that experience level. Hence, the nature of the experience/expertise relationship is highly speculative.

Conclusions drawn by researchers in the novice/expert paradigm (e.g., Berliner, 1989; Clarridge, 1990; Rottenberg & Berliner, 1990; Sabers, Cushing, & Berliner, 1991) are important to the development of assessments appropriate for beginning teachers, but caution must be exercised in adopting their depiction of the experience/expertise continuum. Experience does not always mean expertise. It is possible that teachers with greater experience may be more expert in teaching, but it is not necessarily a causal relationship. As Buchmann (1987) clearly argues, most teachers draw on the folkways of teaching to guide their practice. *Folkways* are “patterns of action and interpretation that exist, are considered right, and are mostly uncodified” (p. 4). Teacher knowledge in terms of folkways may enable some teachers to appear to be effective, yet these same teachers may not demonstrate expertise. Buchmann proposes that only those teachers who utilize less common teaching techniques (e.g., they emphasize explanations of content and encourage discussions that are not just recitations in disguise), judge the appropriateness of their teaching actions, test hypotheses about the teaching/learning interaction, and consider the consequences of their teaching actions should be deemed experts. Whereas Buchmann’s definition of *expertise* is relatively stringent, her elaboration of teacher knowledge as folkways illuminates the need to sharpen our understanding of the relationships among experience, expertise, and effectiveness before we can state with assurance that findings from the teacher effects research are applicable to all levels of experience and expertise.

Finally, and perhaps most importantly, we cannot assume that what is documented through the many descriptive and correlational studies of effective teaching and learning to teach is what should be. Descriptions are not necessarily grounds for prescriptions. Ultimately, our definition of what constitutes competent practice by beginning teachers will reflect what wise practitioners take to be the most salient conception of competent teaching (Feiman-Nemser, personal communication, January 8, 1991).

Methodological Notes

This review is actually a review of reviews—not a meta-analysis in the statistical sense but a content analysis of reviews of effective teaching and studies of learning to teach. I focused specifically on reviews that offered insight into what competent teaching might be, regardless of the teaching context. Literature for this analysis came from relevant chapters of the *Handbook of Research on Teaching* (Wittrock, 1986a), two ERIC searches (one of literature published between 1985–1990, the other of beginning teachers), papers from recent meetings of the American Educational Research Association, and recommendations from an advisory committee of experts in the fields of effective teaching, teacher cognition, expert/novice differences, and learning to teach.

In one sense, what is reported here is not new. Aspects of competent teaching have been explored and discussed in previous editions of the *Handbook of Research on Teaching* (e.g., process-product research findings) as well as in many other books, monographs, and journal articles. Yet what I present here is a departure from literature now available, for it integrates results across paradigms. Process-product research findings are melded with findings from studies of time and learning, pupil cognition and the mediation of teaching, classroom ecology, and teacher cognition. In my reading, I take the perspective of those who must develop a sound and meaningful assessment system for teacher licensure. The overarching question I seek to answer is: What should we expect of beginning teachers in terms of their performance of the preactive, interactive, and postactive tasks of teaching? In other words, what is competent teaching for beginning teachers?

The Teaching Tasks Framework

Throughout the article, I construct a composite of competent teaching for beginning teachers by focusing on three broad domains of teacher tasks that appear to be important, regardless of the subject matter or grade level taught or the teaching/learning model employed (e.g., inductive thinking, nondirective, group investigation, mastery learning [Joyce & Weil, 1986]). The three task domains are preactive, interactive, and postactive. The terms *preactive* and *interactive* were coined by Jackson (1968), and *postactive* seems to have originated with Clark and Peterson (1986). Table 1 lists the major activities of each domain.

There is a fourth domain of teacher tasks—administrative tasks—but this review does not detail these tasks because they encompass functions teachers perform above and beyond the instructional process. For instance, teachers administer standardized, state, and/or district tests; file records of equipment and other school property; and monitor student behavior outside the classroom in locations such as the bathroom, the hallway, or the playground. Whereas these activities supplement instruction, they are usually not at the intersection of teachers, students, and subject matter; therefore, I have not included them in the review.

The sense in which I use the three conceptual task categories is not one bounded by time—tasks may occur simultaneously or sequentially. For example, while teachers

TABLE 1
Teaching task domains

I. Preactive tasks
Comprehend content and materials
Critique content, materials, and teaching methods
Adapt content, plans, and materials
Prepare plans, materials, and physical space
II. Interactive tasks
Implement and adjust plans during instruction
Organize and monitor students, time, and materials during instruction
Evaluate student learning
III. Postactive tasks
Reflect on one's own actions and students' responses in order to improve teaching
Continue professional development
Interact with colleagues

grade student papers (an interactive task), they may reflect on how the students' responses met or did not meet their expectations (a postactive task). They may then use this information to plan the next day's lesson (a preactive task). I chose the teaching tasks conceptual framework because of its ability to transcend teaching contexts. Whereas it may be argued that teachers' educational philosophies influence their pedagogical choices (e.g., educational goals, instructional grouping, activities, materials), from a structural perspective, the teaching tasks they perform are relatively homogeneous. This is not to say that teaching is the same across subject matter, grade level, school, teaching model, and so forth. Context does matter. However, the major difference context makes is in the particular understandings teachers need to perform the tasks successfully, not in the tasks themselves.

Understandings comprise skills, abilities, knowledge, and beliefs that are directly related to the execution of the task. *Understandings* refer to both the capacity teachers have to comprehend and what they actually comprehend. Table 2 shows the definitions I arrived at by integrating the literature in all four domains of understandings: general subjects/liberal arts, content, general principles of teaching and learning, and content-specific pedagogy.

In brief, general subjects/liberal arts might be thought of as a table top, indicating breadth of understanding, while content acts as the pedestal, or depth of understanding. General principles of teaching and learning refer to pedagogy that crosses many, if not all, subject areas and grade levels but does not require knowledge of a specific subject matter. Of all the domains of teacher understandings, content-specific pedagogy is both the most elusive and the most discussed in the recent press. Each of the scholars who writes about content-specific pedagogy presents a definition that is slightly different from the others—perhaps owing to the different content areas investigated, but more likely due to the size of the scalpel they use to view teaching (Marks, 1990). For example, scholars refer to the domain as: (a) *content-specific pedagogy* (Marks, 1990; Shulman & Sykes, 1986), (b) *pedagogical content knowledge* (Marks, 1990; Grossman, 1988; Shulman, 1987), (c) *subject-specific pedagogical knowledge* (McDiarmid, Ball, & Anderson, 1989), (d) *content-specific cognitive knowledge* (Peterson, 1988), and (e) *subject matter specific pedagogical knowledge* (Tamir, 1988). My integration of these slightly different definitions places content-specific pedagogy at the center of teacher understandings, where it contextualizes each of the other domains. Figure 1 illustrates how I picture the relationships among these domains.

In addition to understandings, teachers need certain personality characteristics to execute teaching tasks in a competent manner. *Personality characteristics* are those interests, temperaments, personality traits, and moral/ethical standards that suggest what the teacher is likely to do rather than how well he or she can do at peak performance. Some of these character traits include enthusiasm, warmth, supportiveness of students, sensitivity, interest in people, flexibility, and self-confidence (Shechtman, 1989). In addition, some argue that teachers should operate from moral/ethical standards that include honesty, intellectual freedom, equity, tolerance, due process, respect, trust, and care (Clark, 1990; Strike, 1990).

In what follows, I describe what is known about competent performance of teaching tasks and, where possible, what we know about how beginning teachers perform these tasks. As the review will show, beginning teachers often lack an

TABLE 2

Definitions of domains of understanding

General subjects/ Liberal arts	Content	General principles of teaching and learning	Content-specific pedagogy
Basic skills, e.g., speaking, listening, reading, writing, calculating (Rosenfeld & Tannenbaum, 1991)	What teachers know and believe about the subject matter they teach (Kennedy, 1990)	Instructional techniques and how to use them in a lesson	Purposes for teaching a particular subject matter, concept, and/or skill at a given level (Marks, 1990)
Subject areas of humanities, social sciences, natural sciences, fine arts, other disciplines	Frameworks and paradigms used to direct inquiry and to interpret data (Schwab, 1978)	Lesson structure and how to plan for instruction (Leinhardt & Greeno, 1986)	A scope and sequence of concepts, skills, etc. to be taught in the subject matter at a particular level for a given group of students (Hewson & Hewson, 1989)
How practitioners in these disciplines see the world—e.g., the questions they ask, the evidence they take as valid, the ways in which they gather evidence (Johnston, Spalding, Paden, & Ziffren, 1989)	Facts, terms, and concepts in the discipline and the relationships among them (Grossman, Wilson, & Shulman, 1989)	Classroom management techniques (Evertson, 1989)	How to choose, critique, adapt, and use curricular materials and resources for the subject to be taught (Marks, 1990)
	Methodologies used for inquiry in the discipline	Theories of human growth and development (Beyersbach, Smith, & Swift, 1989; Nucci, 1989)	An understanding of the knowledge, skills, abilities, and interests students bring to the study of the subject matter (Arreaga-Mayer & Greenwood, 1986; Confrey, 1990; Corno & Snow, 1986; Swisher & Deyhle, 1987; Wallace, 1986)—e.g.,
	The relationships among concepts and theories across subject areas	The curriculum planning process and how to carry it out	—students' conceptions and possible misconceptions of particular topics in a subject matter
	How to judge the correctness of the content (Ball, 1989)	The overall role of evaluation in the instructional program (Merwin, 1989; Zumwalt, 1989)	—students' beliefs about their ability to succeed in the subject matter
		Social, cultural, and envi-	—students' academic self-concept
			—how student conceptions of the subject matter change over time
			—students' cognitive, affective, and physical styles

How to apply the concepts and methodologies to problems (Schwab, 1978)	ronmental influences on teaching and learning—e.g., the classroom and school culture (Cazden & Mehan, 1989)	—students' nonverbal and sociolinguistic backgrounds
The nature of the discipline as an area of inquiry throughout history	History and philosophy of education as a field of inquiry (Johnston, Spalding, Paden, & Ziffren, 1989)	—the expectations students' families have of them and the type of help they receive from their families in educational matters
Social norms that permeate the discipline	Legal aspects of education (McCarthy, 1989)	—students' personal experiences
The relationship of the subject to social issues		The most appropriate forms of representation for the subject matter for a given group of students: metaphors, explanations, illustrations, examples, etc., that make the subject matter understandable and interesting to students (McDiarmid, Ball, & Anderson, 1989; Wilson, Shulman, & Richert, 1987)
The value of the subject to everyday life (Kennedy, 1990)		Knowledge of teaching strategies and methods that make the subject matter comprehensible and interesting to students and that foster conceptual understanding of the subject matter (Grossman, 1989; Leinhardt & Smith, 1985)
Intellectual and personal dispositions toward the subject matter (Ball, 1989; Grossman, Wilson, & Shulman, 1989)		Evaluation strategies and methods appropriate for the subject matter and students (Tamir, 1988)
		Professional and student organizations in the discipline

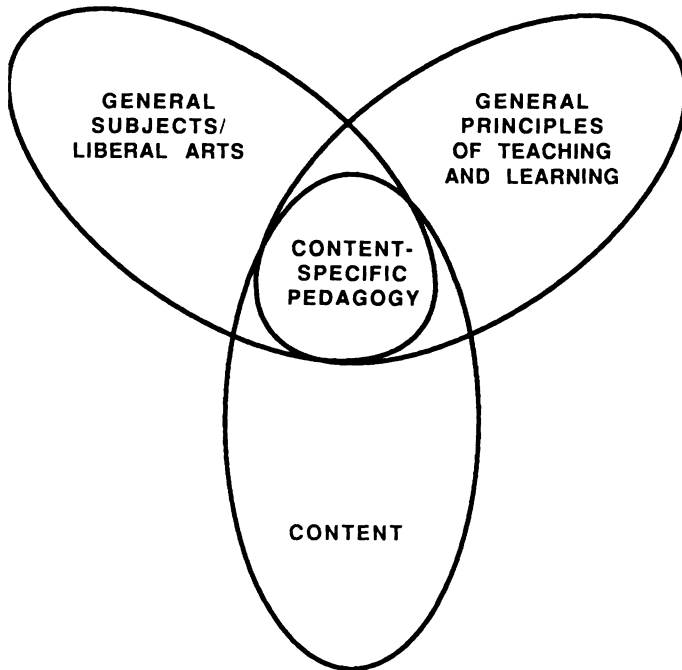


FIGURE 1. *Domains of understanding*

adequate knowledge base of understandings to perform teaching tasks in an effective manner.

Competent Teaching Along a Continuum of Experience

Preactive Teaching Tasks

Teacher planning extends over variable lengths of time, from the short range (lesson, daily, weekly, unit) to the long range (term, yearly), and serves multiple purposes (Clark & Peterson, 1986). Planning may be done to transform the curriculum; to allocate instructional time for subject matter and for individuals and groups of students; to ensure the availability of instructional support materials (e.g., textbooks, audiovisual aids, computer software); to study and review the content; and to align curriculum content and objectives, instructional methods, strategies, and assessments. Or it may be done to organize daily, weekly, and term schedules; to meet administrative accountability requirements; to communicate with substitute teachers; and to provide immediate psychic rewards in the form of feelings of confidence and reduction of uncertainty (Anderson, 1986; Clark & Peterson, 1986). The functions of teacher planning are directly connected to instructional variables such as lesson structuring, opportunity to learn, and time on task.

Research on the preactive tasks of teaching, which is mainly descriptive in nature, has focused primarily on experienced elementary school teachers and on a single type of planning, such as that concerned with a particular instructional episode (Clark &

Peterson, 1986). However, there is speculation about how novice and more experienced teacher planning differs. Clark and Peterson found that experienced teachers report only a modest-to-insignificant role of lesson planning in their everyday lives and seem not to use a linear, rational planning model. The researchers posited that beginners, on the other hand, might need a linear model to structure their planning until they develop a planning style that is compatible with their own characteristics and teaching context. In general, beginning teacher planning is more time consuming than expert teacher planning, and it focuses mostly on the development of concrete strategies and activities for involving students with the content. But it lacks the contingency plans common to more experienced teacher planning (Borko & Livingston, 1989; Borko, Livingston, McCaleb, & Mauro, 1988; Housner & Griffey, 1985; Ropo, 1987).

Because students achieve more and rate lessons higher when concepts, facts, principles, and procedures are interrelated during the lesson (Smith, 1985; Van Patten, Chao, & Reigeluth, 1986), competent teachers must know the subject matter in a way that allows them to create lessons that help students relate new information to what they already know and that integrate instruction across content areas (Porter & Brophy, 1988). Such lessons engage students in activities that are suited to their current developmental and achievement levels, interests, and needs (Brophy & Good, 1986; Porter & Brophy, 1988; Taylor & Valentine, 1985; Ysseldyke, Christenson, & Thurlow, 1987; Zigmond, Sansone, Miller, Donahoe, & Kohnke, 1986). In other words, good lessons invite students to enter the learning process at their own level and then progress from there. This requires setting appropriate expectations for students (Bielefeldt, 1988; Brophy & Good, 1986; Depart. of Education, 1987; Druian & Butler, 1987; Walker, 1985). Expectations that are too low or too high may induce students to disengage from school-based learning (Druian & Butler, 1987; Hohn, 1986; Natriello, 1987). Expectations should be both for instruction and for social behavior. For example, students should know what work they are accountable for, how to get help when they need it, and what to do when they are finished with their assignments (Brophy & Good, 1986). Likewise, competent teachers set appropriate expectations for themselves. This means that teachers believe that they are effective and can affect the learning of students (Taylor & Valentine, 1985).

Competent teachers also use curricular materials that engage students' interests and that are appropriate for students' abilities and needs (Osborn, Jones, & Stein, 1985; Taylor & Valentine, 1985). Whether or not students comprehend content in curricular materials, such as a textbook, depends on things such as the arrangement of ideas and the nature of the relationships connecting the ideas, the coherence of ideas, and graphics (Osborn, Jones, & Stein, 1985). Effective teachers "make expert use of existing instructional materials in order to devote more time to practices that enrich and clarify the content" (Porter & Brophy, 1988, p. 75). This expert use requires tailoring the curricular materials to the students, a task often difficult for beginning teachers (Schram, Feiman-Nemser, & Ball, 1989). Beginning teachers have trouble looking at the larger scope and sequence of topics within the textbook, whereas experienced teachers can make sense of individual topics by drawing on their past encounters with students. Experience seems to influence the teacher's appraisal of the text's adequacy for students (Schram, Feiman-Nemser, & Ball, 1989).

A strong influence on teachers' execution of the preactive tasks of teaching is their understanding of students. It appears that beginning teachers may see students in

ways different from the ways good experienced teachers see students. Paine (1989) describes four perspectives teachers might have of student differences. Each perspective builds on the previous one. Teachers may see students as having *individual differences*, which are psychological and biological differences; *categorical differences*, which group students according to gender, social class, race, and so forth without attention to the social construction of the category; *contextual differences*, which take into consideration the socially constructed causes of difference; and *pedagogical perspectives*, which recognize the pedagogical implications of student diversity. Paine found that prospective teachers' views of student differences are often "idealistic and more coherent in abstract than concrete situational terms" (p. 20). Their perspectives are chiefly of the individual difference type and, to a lesser extent, the categorical difference. Consequently, they tend to see student differences as decontextualized, which makes them unsure of how to concretize the abstract notions of fairness and equality in teaching. Thus, they suggest teaching methods that treat diversity as a problem, not as a phenomenon. "In short, these teachers bring approaches to diversity that have the potential for reproducing inequality and reflect larger social and historical dilemmas" (Paine, 1989, p. 20).

Paine's depiction of beginning teachers' knowledge of student differences is also voiced by other researchers, whose findings appear to converge into the view that beginning teachers take into consideration students' prior knowledge of the subject matter and their prior academic performance less often than do experienced teachers (Carter, Cushing, Sabers, Stein, & Berliner, 1988; Fogarty, Wang, & Creek, 1983; Leinhardt, 1983; Pinnegar, 1989; Shulman, 1989). Knowledge of student differences influences the teacher's instructional planning and subsequent implementation of those plans.

Summary of findings in preactive teaching tasks. Competent teachers create lessons that enable students to connect what they know to new information. In order to create good lessons, teachers must know their subject matter in a way that enables them to explain it to students. Teachers must also know their students in ways that allow them to tailor the subject matter, curricular materials, and instructional activities to the students. Beginning teachers appear to understand the need for creating lessons that are appropriate for the subject matter and students, but they seem to accomplish this task only in superficial ways. They often do not know their subject matter in a way that allows them to explain it to students. They also have difficulty seeing the pedagogical implications of student differences, even though they may be able to detect overt student differences. Thus, they are often unable to tailor materials and instruction to individual students.

Interactive Teaching Tasks

When performing interactive tasks of teaching, teachers actively engage with students and content in the teaching/learning process. Findings from research on teachers' thinking indicate that during instruction the majority of teachers' interactive thought deals with student characteristics and states, a relatively smaller portion of thought deals with the instructional process (procedures, strategies, etc.), and the smallest portion deals with instructional objectives or with the structure and organization of the content being taught (Clark & Peterson, 1986). In addition, teachers say that their thoughts prior to decision making include factors such as environment, the appropriateness of a particular teaching strategy, and their own state of mind. The

interactive decision making of effective teachers follows the findings of research on expert/novice differences and is postulated to involve rapid judgment, chunking of information, and differentiation of important from unimportant information. Conversely, ineffective and/or novice teachers seem unable to chunk or differentiate the large amount of varied bits of information they face during interactive teaching.

Drawing on this relatively unsystematic and unsegmented body of teacher thinking research to describe effective teaching practices may be hazardous because little empirical research has focused on how effective teachers make interactive decisions. Teacher-thinking researchers have tended to focus on relatively discrete and isolated aspects of teachers' thoughts and actions rather than on the whole process of teaching or on the relationship among tasks of teaching (Clark & Peterson, 1986). Likewise, the research on effective teaching as it has been construed in the past (e.g., relating student achievement to teacher behaviors, such as time on task) largely leaves out the student as mediator of instruction. This is a serious omission, for student beliefs about success are one of the most important factors in determining school achievement (Wittrock, 1986b).

Creating and managing the learning environment. The meaning, function, and effect of discrete teacher and student behaviors are shaped by the larger contexts of activities, lessons, and class sessions. These various teacher and student behaviors require classroom management actions and strategies. In this sense, classroom management goes beyond the problems of "misbehavior" (a culturally embedded term) or student engagement into the realm of order and organization of classroom life (Doyle, 1986). Competent teachers see themselves more as managers of classroom life—that is, as persons who establish and maintain effective learning environments rather than as authority figures or disciplinarians (Brophy, 1987). Organization of classroom life and order in the classroom depends on the social participation of students and teacher and the substance of the lesson; it is a never-ending task of teaching (Doyle, 1986).

Classrooms of competent teachers are characterized by positive expressive qualities, which include *withitness* (Kounin, 1970), rapport, empathy, and personal interactions between teacher and students (Brophy & Good, 1986; Druian & Butler, 1987; Stockard & Mayberry, 1985; Taylor & Valentine, 1985). Yet, the positive qualities of effective classrooms are often difficult to achieve due to differences in meanings that teachers and students give to words and actions (Cazden, 1986). Competent teachers strive to understand the students in their classes in order to create and sustain a learning community.

Another characteristic common to competent teachers' classrooms is the amount of time spent on instruction and learning (Anderson, 1986; Emans & Milburn, 1989; Ysseldyke et al., 1987). *Academic learning time*, as it is called in the literature, is one of the most widely studied aspects of teaching. There is little controversy over the finding that, when students spend more of their time engaged in the lesson, they learn more (Bennett, 1987; Brophy & Good, 1986; Conoley, 1988; Gettinger, 1986). Maximizing the time that students spend actively involved in *meaningful* academic activities (e.g., attending to lessons, working on assignments) and minimizing the time that they spend *off-task* (waiting for activities to get started, making transitions between activities, sitting with nothing to do, or engaging in misconduct) are especially important in creating a positive learning environment. Findings from the academic learning time research also seem to hold for students with special needs,

such as low-achieving or poorly motivated students (Gettinger, 1986), learning disabled students (Zigmond et al., 1986), and students with linguistic and cultural differences (Arreaga-Mayer & Greenwood, 1986).

Despite evidence to warrant taking the academic learning time research seriously, there are conflicting views about what constitutes on-task behavior, the quality of instruction that students spend time on, the specific nature of the relationship between engaged time and achievement, the inconsistent measurement procedures employed, and how well the time-and-learning studies generalize across different teaching situations (e.g., most of the studies were done in math and science classrooms where teacher-directed instruction prevailed; Gettinger, 1986). In short, as Gettinger states,

Though many of the studies on learning time are useful in a general, descriptive way, the findings do not help a teacher predict how or if changes in learning time will affect student achievement. (p. 15)

Establishing and maintaining rules and routines are important parts of creating and managing a learning environment (Anderson, 1986; Brophy & Good, 1986; Doyle, 1986; Taylor & Valentine, 1985). Whichever way the teacher chooses to perform this task—from teacher-directed to student-directed—an understanding of the differences among students in the classroom is necessary. These rules and routines, or standardized ways to handle particular situations, simplify the complexities of classroom life for both teachers and students by making events more predictable (Brophy, 1987). As teachers gain in experience and success in the classroom, they appear to understand the likely configuration of events and monitor and guide activities in light of this information (Doyle, 1986). When teachers do not establish and maintain standards for classroom life, they may contribute to dishonest student behavior (Miller, 1987).

Teachers can establish rules and routines by modeling and instructing for the desired behavior. This means that teachers must provide students with the opportunities to understand why the desired behavior is important and how and when to execute it. As Brophy (1987) suggests, by instructing students in the rules and routines and reinforcing positive expectations and social labels, teachers can help students learn to control their own behavior. Depending on the age and ability level of the student, the teacher may need to adjust the rules and routines and the ways in which he or she goes about modeling, instructing, and communicating these expectations for behavior. For example, Brophy suggests that, in the primary grades, teachers may need to spend a large amount of time formally instructing in the rules, procedures, and routines of classroom life. In the middle elementary grades, teachers need to reinforce the expected classroom rules and routines. When students are adolescents, around grades 5–10, management concerns become more pronounced with greater emphasis on the disciplinary aspects. In upper secondary grades, more teacher time can be spent on instructing in the subject matter, because most students have passed through the more rebellious stages of adolescence, although the teacher should still reinforce the expected norms of behavior.

Students with special needs should also have management strategies tailored to them (Druian & Butler, 1987; Zigmond et al., 1986). For instance, hyperactive, mainstreamed adolescents need classrooms structured with well-defined class rules, definite consequences for lack of adherence to rules, and consistency in enforcement of the rules; provisions for productive physical movement (e.g., distributing and

collecting materials, erasing the blackboard, running errands); low levels of classroom noise; behavior modification; and cognitive training programs that are designed to develop self-monitoring and generalization to classroom tasks (Schuck, Liddell, & Bigelow, 1987).

Little research-based information is available regarding how effective teachers respond to repeated student misconduct. Most of the findings are general techniques rather than specific responses particular to students or situations (Brophy, 1987). However, there are some discipline programs that seem effective. For example, positive relationships have been shown between assertive discipline programs and (a) reductions in time spent in discipline referrals, (b) improvement in classroom discipline and student behavior, and (c) improvement in teachers' and students' self-concept (McCormack, 1987).

In general, to deal effectively with discipline problems, competent teachers ignore minor distractions and instances of inattention and deal with potentially serious disruptions early by using eye contact, movement through the classroom, or short questions or comments to the disruptive student (Taylor & Valentine, 1985). They talk with the misbehaving student in private to minimize power struggles and face-saving gestures (Brophy, 1987). They question the student to determine his/her level of awareness about the behavior and ask for explanations for it (Brophy, 1987). They make sure the student understands why the behavior is unacceptable and cannot be tolerated (Brophy, 1987; Depart. of Education, 1987). They try to get the student to accept responsibility for the behavior and to make a commitment to change (Brophy, 1987). They model or instruct the student in more acceptable ways to behave (Brophy, 1987; Taylor & Valentine, 1985). They help the student develop a mutually agreeable plan for dealing with the misbehavior (Brophy, 1987). They warn the student about what will happen if the behavior continues and, if it does, follow through with the consequences while pressuring the student to change his/her behavior (Bielefeldt, 1988; Brophy, 1987; Druian & Butler, 1987). And, as a last resort, competent teachers invoke punishments that emanate from respect for students' rights and commitment to a positive relationship between student and teacher (Bielefeldt, 1988).

Despite beginning teachers' general belief that they will not have problems in managing, instructing, and developing interpersonal relationships (Weinstein, 1988, 1989), they do have concerns about establishing general managerial routines, such as classroom organization and discipline (Amarel & Feiman-Nemser, 1988; Veenman, 1984); establishing social relationships with students and other teachers; and creating contexts that support their own professional development (Hollingsworth, 1990). And they do appear to have problems, particularly in the areas of student discipline (Veenman, 1984) and understanding classroom life (Bents & Bents, 1990; Carter, Sabers, Cushing, Pinnegar, & Berliner, 1987; Hollingsworth, 1989; Peterson & Comeaux, 1987; Sabers, Cushing, & Berliner, 1991). For example, Pinnegar (1989) found that student teachers in science think cooperation is best achieved by developing good relationships with students. First-year science teachers say it is important to know which students are likely to impede progress, but they are not able to seek out information about students that would help them deal with problem students. Experienced teachers think often about students who are not cooperative and make distinctions between students who "could not" and "would not" do the work; they have a repertoire of strategies to engage students in work.

A concerted effort has been made to improve beginning teachers' skills in managing students' inappropriate behaviors through beginning teacher induction programs. Findings from one such program (Schaffer, Stringfield, & Wolfe, 1990) indicate that the teachers did not improve until the second year of teaching. Even at the end of 2 years, the teachers' skills did not equal those of their experienced peers (on the average). Only during the second year were new teachers able to keep the class focused on the subject matter while monitoring potential student behavior problems.

To understand why novices seem to have difficulties dealing with student discipline problems, Swanson, O'Connor, and Cooney (1990) conducted an information-processing study of novice and expert teachers. The researchers found differences in the emphases novices and experts place on defining and representing the problem, as well as evaluating possible solution strategies. Their results indicate that novices are concerned primarily with solving problems rather than trying to systematically define the problem and test possible solutions. Expert teachers, in contrast, give priority to defining and representing the problem and then to evaluating possible strategies. The researchers concluded that, because expert teachers have better established procedural knowledge for solving discipline problems than do novices, experts can divert more of their attention to problem definition, representation, and strategy evaluation.

Beginning teachers also appear to have difficulty making sense of classroom life (Bents & Bents, 1990; Carter et al., 1987; Hollingsworth, 1989; Peterson & Comeaux, 1987; Sabers et al., 1991). Recent investigations by Sabers, Cushing, and Berliner of novice, advanced beginner, and expert science teachers illustrate this point. Novices had had no pedagogical coursework but were science subject-matter experts who were interested in teaching; advanced beginners were student teachers or first-year science teachers with the reputation of having potential to develop into excellent teachers; and experts were junior or senior high-school science teachers who were nominated for teaching excellence and then observed by the research team and rated to be excellent. Findings suggest that novices and advanced beginners seem unable to discriminate between important and unimportant stimuli when viewing videotaped classroom scenes. In other words, they are less able to make meaning out of a given situation than are experts. The experiences that experts bring to the classroom setting seem to aid them in understanding what is going on. Novices also lack understanding of what teachers do to make a lesson effective. As Sabers, Cushing, and Berliner point out, novices "apparently regard content, equipment, and materials as the keys to success" (p. 25). Advanced beginners are able to recognize pedagogical methods, such as lecture, but seem to assign undue significance to the instructional materials used. In general, experts are able to "a) monitor and comprehend the events presented, b) interpret the instructional strategies used, c) hypothesize reasons for behavior seen, and d) offer solution strategies for problems identified" (p. 84). Novices seem to lack the mental schemata for thinking holistically about teaching. Advanced beginners (student teachers or first-year teachers), on the other hand, come closer to the experts' understanding of classrooms.

Another important aspect of creating and managing a learning environment is arranging physical and social conditions conducive to learning. Regardless of the type of lesson the teacher intends to use, competent teachers are prepared to teach. They have physical resources (e.g., curricular materials) ready and available to students,

and they arrange the physical layout to provide appropriate areas for individuals and groups and to provide teachers with visual contact with students from anywhere in the classroom (Conoley, 1988; Ward, 1987). Competent teachers also determine the most appropriate social arrangements for the students and lesson.

How a teacher groups for instruction (e.g., heterogeneous, homogeneous, cooperative, learning cycle, peer, individualized) affects opportunities for students to achieve and, ultimately, contributes to the success of the lesson. Grouping has both benefits and costs, depending on the type used. If teachers use within-class grouping, as in the case of beginning reading instruction and in highly heterogeneous classes, they should configure the classroom in a way that is most appropriate for the students, the educational goals, and themselves (Anderson & Pigford, 1988; Druian & Butler, 1987; Harp, 1989; Slavin, 1987a). This will probably mean using more than one type of instructional group and regrouping students when necessary to meet their instructional needs (Harp, 1989; Slavin, 1987a; Stedman, 1986; Ward, 1987). In creating groups, teachers should balance the need for instruction with that of classroom management (Anderson & Pigford, 1988). This means making arrangements for all students in the class and fostering independent work habits in the groups not working with the teacher (Anderson, 1986; Anderson & Pigford, 1988).

When working with groups, teachers should be clear about directions and expectations, offer reinforcement and feedback to students about their academic work as well as their use of group process skills, and spend substantive time with groups (Anderson & Pigford, 1988; Ward, 1987). This may mean presenting new information in a total-class, direct instruction setting while splitting into smaller groups for review, drill and practice, or enrichment activities (Ward, 1987).

The data do not say much about when small-group instruction should be considered the method of choice nor about how it should be designed and managed (Brophy & Good, 1986). There is some evidence that using too many small groups can create management problems, but the trade-off is that students learn more when they work in small instructional groups of about four to six students for at least part of the time (Ward, 1987). According to Webb (1985), small groups are an effective way to increase students' verbal interactions with others. Additionally, it appears that students who are experiencing difficulties in school can benefit from instructional grouping. Grouping can provide better use of instructional time through more efficient student management, such as increased peer-peer interaction and observational learning, and can increase teachers' contact time with individual students (Lloyd, Crowley, Kohler, & Strain, 1988; Polloway, Cronin, & Patton, 1986; Zigmond et al., 1986). However, the type of small group makes a difference.

When students are assigned to small groups on the basis of ability, the findings are mixed (Anderson & Pigford, 1988; Lake, 1988; Ward, 1987). For example, in ability groups, higher ability students seem to learn better, moderate ability students appear neither to learn more nor less, and low-ability students seem to learn less (Ward, 1987). The harmful effects of ability grouping include low expectations for student achievement and behavior, lowered self-esteem, less instruction time and less learning for low-ability groups, and a stigmatizing effect on low achievers (Dawson, 1987; Harp, 1989; Slavin, 1987a). In short, ability grouping plans are beneficial for student achievement when students remain in heterogeneous classes most of the day and are regrouped by performance level only in instances in which reducing heterogeneity is particularly important, such as when teaching a specific skill; ability grouping is also

beneficial when regrouping based on achievement takes place frequently and when teachers adapt their level and pace of instruction to accommodate students' needs (Anderson & Pigford, 1988; Slavin, 1987a).

Among all the grouping strategies, cooperative learning groups enjoy the most positive reputation because of the opportunities for students to benefit both academically as well as socially (Johnson & Johnson, 1985; Slavin, 1987b). This appears to be true for students of both sexes at a variety of grade levels and in many subjects. Other diverse outcomes of cooperative learning groups include intergroup relations, motivation to learn, attitudes toward instruction and the instructors, independence of the teacher, relationships between mainstreamed and normal-progress students, student self-esteem, and decrease of competitive goal structures, inexpensiveness, and ease of use (Dept. of Education, 1987; Hunt, 1987; Johnson & Johnson, 1985; Slavin, 1987b; Wood, 1987). Despite the overwhelming benefits of using cooperative learning groups, there are factors that may thwart this technique's effectiveness. These include the teacher's training and commitment to the technique and the reward structure designed by the teacher (Stallings & Stipek, 1986), as well as the students' own expectations for their involvement in the group, depending on the salience of the status characteristics (e.g., race, gender, prior achievement; Cohen, 1984, 1986). Cohen (1986) argues that cooperative groups must require students to take interdependent roles in order to counteract negative status differences.

Another form of small groups is mixed-age grouping. Mixed-age grouping works best in an informal, multidimensional, nonage-based curriculum when the age range is such that students can share interests, when there are enough older students that they keep from regressing, and when there is no particular amount of time that has to be allocated to mixed- and/or same-age grouping (Katz, Evangelou, & Hartman, 1989; Pratt, 1986). Findings suggest that mixed-age grouping has no consistent effect on academic achievement but that it does tend to be associated with better self-concept and attitude toward school; prosocial behaviors such as helping, sharing, and turn taking; leadership opportunities for older students; and opportunities for younger children to become involved in more complex play than they could initiate by themselves (Katz et al., 1989; Pratt, 1986). A problem with mixed-age grouping is that it makes curriculum integration and thematic teaching difficult (Harp, 1989), although this finding might well be contested by teachers who successfully accomplished both prior to the practice of grade leveling (Cuban, 1984).

Peer tutoring and individualized instruction offer alternatives to small groups. The bulk of research on peer tutoring appears to have the most support in writing instruction (Gillam, 1990), reading instruction (Topping, 1987), and with students with special needs, such as learning disabilities (Ehly, 1987; Schuck et al., 1987). Generalization to other areas may not be warranted, although it seems plausible that peer instruction may be beneficial in any subject area as long as it is accompanied by teacher monitoring. Peer tutoring can lead to improved academic achievement of both student and tutor; positive attitudes towards course work; and the necessary contexts for academic and social responding, cooperation, and peer conflict resolution (Greenwood, Carta, & Hall, 1988; Greenwood, Delquadri, & Hall, 1984). However, peer tutoring has its drawbacks—namely, “the potential for side effects when they are inadequately monitored by teachers and ethical concerns related to peer competence, informed consent, and accountability” (Greenwood, Carta, & Hall, 1988, p. 271).

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Like peer tutoring, individualized instruction, which may take various forms, such as independent study or individual pacing, has benefits that appear to outweigh the drawbacks, although the usual caveat applies: Instructional choices should be appropriate for both students and subject matter. For example, there are inconclusive results regarding the effectiveness of individualized instruction for science academic achievement; however, the method appears to contribute to more positive student attitudes in science (Clark, 1985). In sum, there are multiple ways to group students for instruction. Competent teachers may determine the best social arrangement to accomplish the goals of instruction.

Little is known about how effectively beginning teachers use instructional grouping; however, given descriptions of beginning teachers as less familiar with student differences and ways to accommodate these differences in instruction, beginners may have difficulty selecting the appropriate grouping strategy for a given goal and group of students.

Representing and presenting subject matter. How teachers know the subject matter seems to affect their instruction (Carlsen, 1988; Grossman, 1987; Wilson & Wineburg, 1988). As Peterson, Fennema, Carpenter, and Loef (1989) noted in their study of first-grade teachers, a coherent pedagogical orientation could be inferred for each teacher; the orientation seemed to be related to the kinds of instruction that the teacher reported using in the classroom (e.g., more cognitively oriented teachers spent more time developing students' counting strategies and used more word problems than did noncognitively oriented teachers). Stein, Baxter, and Leinhardt (1990) also found that teachers' orientations to the subject matter influenced how they approached instruction. Teachers with

more explicit and better organized knowledge tend to provide instruction that features conceptual connections, appropriate and varied representations, and active and meaningful student discourse. On the other hand, teachers with limited knowledge have been found to portray the subject as a collection of static facts; to provide impoverished or inappropriate examples, analogies, and/or representations; and to emphasize seatwork assignments and/or routinized student input as opposed to meaningful dialogue. (p. 641)

Additionally, the researchers suggest that teachers with limited subject-matter knowledge may instruct students in ways that overutilize procedural rules which may contribute to "student understanding that is structurally weak because it is organized around relatively unmeaningful rules. Furthermore, these rules may be sowing the seeds of future misunderstandings" (Stein et al., 1990, p. 660).

Findings from research on beginning teachers indicate a surprisingly low level of content-specific pedagogical understandings (Feiman-Nemser & Parker, 1990; Gomez, 1988; Grossman, 1991; Hashweh, 1987; Reynolds, Haymore, Ringstaff, & Grossman, 1988; Shulman, 1987; Steinberg, Haymore, & Marks, 1985; Wilson, Shulman, & Richert, 1987). Yet, teaching experience seems to make a difference in the growth of this domain (Grossman, Wilson, & Shulman, 1989; Wilson & Wineburg, 1988). Haymore (1987) found that during student teaching a beginning secondary school teacher began to develop a sense of what made particular topics in mathematics difficult for students. Similarly, Grossman and Richert (1988) found that beginning teachers created frameworks for thinking about the purposes for teaching specific subject areas, even though their teacher education courses did not address this aspect of teaching.

Before competent teachers engage students with new subject matter, they assess the readiness level of students for the new material. This may include reviewing previous learning, checking homework, and reteaching if necessary (Gersten, Car-nine, & Woodward, 1987; Rosenshine, 1988; Rosenshine & Chapman, 1990; Rosenshine & Stevens, 1986). In addition, it includes determining students' preconceptions of the subject matter. Preconceptions may harbor misconceptions, which must be confronted and changed (Anderson & Smith, 1987; Roth, 1985). Competent teachers then use information about students' readiness to adapt the level and pace of instruction to the ability levels of the students (Anderson & Pigford, 1988; Brophy & Good, 1986; Gettinger, 1986; Taylor & Valentine, 1985). When teachers adapt instruction to student needs, they arrange the environmental conditions that best fit individual learner differences, which means using less intrusive instruction as students become better self-regulated learners (Corno & Snow, 1986). In the teacher decision-making literature, experienced teachers appear to vary teaching strategies in response to student performance cues much more than do novices (Cotton, 1988).

The lessons competent teachers implement have some common characteristics (Anderson, 1986; Conoley, 1988; Gettinger, 1986; Taylor & Valentine, 1985; Webb, 1985; Ysseldyke et al., 1987): The assigned tasks are of appropriate difficulty for students and are interesting or enjoyable. Clear expectations are communicated to students. The physical and social conditions under which learning occurs are conducive to learning. New learning is related to previous learning; attention is focused on the relevant and important aspects of the instructional materials and activities. The pace of the lesson is appropriate for the students. The flow of activity in the classroom is maintained (e.g., students do not spend a long time sitting and waiting; alternative academic opportunities exist for unengaged students). Task-oriented behavior is reinforced through frequent substantive interaction with the teacher. Performance on the assigned tasks is frequently monitored and assessed. And lastly, feedback is provided on the adequacy or excellence of student task performance.

Beginning teachers may not demonstrate consistency in their instructional routines (Leinhardt & Greeno, 1986). For example, the novice Leinhardt and Greeno observed constantly changed what she did in class. One day she lectured extensively; the next day, she had students fill in number facts in a chart on the blackboard; the third day, she inserted a presentation between two quizzes. This teacher appeared to have no repetitive pattern to her actions. The experts Leinhardt and Greeno observed were more consistent in their instructional routines. Thus, the researchers posit that novices may not have developed solid instructional routines as part of their teaching repertoire. This, of course, does not mean that novices should not be expected to develop instructional routines. The jury is still out, however, concerning the point at which novices can be expected to have solid routines in place and to have the types of instructional routines that are most appropriate for certain content and students.

Though competent lessons may have common characteristics, structurally they may be quite different. Lessons fall somewhere along a continuum from teacher-directed to student-directed (e.g., direct instruction, student exploration, reciprocal teaching). Most of the research on effective teaching has focused on teacher-directed instruction of well-structured academic skills, such as arithmetic facts, musical notation, and the factual parts of science and history (Rosenhine & Stevens, 1986). Systematically explicit teaching, also called direct instruction, appears to be success-

ful with all students, especially disadvantaged students and handicapped learners (Mathes & Proctor, 1988; Rosenshine, 1988; Rosenshine & Stevens, 1986; Ward, 1987). With ill-structured topics, it is less clear that direct-instruction is as beneficial to student learning. However, some researchers, such as Gersten, Carnine, and Woodward (1987), postulate that direct-instruction techniques are useful for teaching more complex cognitive areas, such as critical reading, concepts in chemistry and earth science, and legal concepts and applications. Their findings are still tentative, but the researchers believe that several principles seem salient so far:

The first is that, even in cognitively complex areas, students need explicit direct instruction in the relevant facts and concepts before moving into the complex cognitive tasks involved in computer simulations or literary analysis. The second is that, when teaching these more open-ended processes, instruction is somewhat more open-ended. Often, there will be a range of appropriate responses to a question. Nonetheless, clear models by the teacher of successful solutions to a problem, an adequate range of examples, and—perhaps most important—specific corrective feedback remain essential to effective instruction. (p. 55)

Research suggests that, in teacher-directed lessons, competent teachers carefully orient students to the new lesson, especially for topics with which the learners have little direct experience—for instance, culturally different topics (Gersten et al., 1987; Moore, 1987; Rosenshine, 1988; Zigmond et al., 1986). Orientation to the lesson may take many forms (e.g., questioning, mapping, scaffolding). Early synthesizing strategies (e.g., Ausubel's [1978] advance organizers) did not serve the purpose of providing knowledge of subject-matter structure; later strategies (e.g., mapping, networking) seem more promising, but they still require theoretical development and empirical testing to warrant wholesale adoption of them (Rosenhine & Chapman, 1990; Van Patten et al., 1986). For example, prereading questions are beneficial not only as a way to activate, review, and develop background knowledge; to preview key concepts; and to set purposes for the reading to follow but also as prereading questions that serve as a model to teach independent question-asking skills (Anthony & Raphael, 1987).

Whenever explanations are given, they should be clear, focused, and in small steps, with student practice after each step (Brophy & Good, 1986; Druian & Butler, 1987; Rosenshine, 1988; Taylor & Valentine, 1985). Key concepts should be highlighted in order to help organize complex bodies of information (Brophy & Good, 1986; Conoley, 1988; Rosenshine & Stevens, 1986). When verbal information is presented with a degree of redundancy, particularly in the form of repeating and reviewing general rules and key concepts, achievement is higher (Brophy & Good, 1986). However, this finding may not hold across cultural groups. For example, Native-American students may need new and difficult material to be presented in a visual, spatial, and/or perceptual mode rather than a verbal mode (Moore, 1987).

Explanations—whether teacher-delivered or built into curricular materials—should include concrete examples, analogies, demonstrations, and models that enable students to relate the new to the familiar or the abstract to the concrete (Brophy & Good, 1986; Conoley, 1988; Rosenshine & Stevens, 1986; Zigmond et al., 1986; Wittrock, 1986b). Metaphoric language used in explanations enables large amounts of information to be packed into a relatively small linguistic package that stimulates mental representations that are more similar to direct perceptual experience (Ortony, 1975; Simons, 1984). While there is little evidence for the instructional effec-

tiveness of metaphoric language, research in the area is increasing, and available evidence supports the view that properly designed metaphors can help students construct new knowledge (Williams, 1988). Properly designed, in this case, means that there is a good match between the things being compared and that the metaphors are age appropriate (Williams, 1988) and subject-matter appropriate (Zeuli & Floden, 1987). Metaphors that employ culturally congruent materials and instructional methods without attention to the subject matter may reinforce students' misconceptions and thus imperil students' conceptual understanding of the subject matter (Zeuli & Floden, 1987). Teachers should not be the only creators of metaphors for the topic at hand. Students, too, should be encouraged to provide metaphors and models. As Perkins (1986) suggests,

Not only will this cause students to become actively and creatively involved in their own learning, but their productions will also provide the teacher with feedback about whether they are understanding the new domain. (p. 94)

As people gain expertise in a field, they seem better able to choose appropriate metaphors for particular situations (Williams, 1988). From this hypothesis, we might infer that there are likely to be differences between novice and expert teachers in terms of their choice of representations for the subject matter. However, experience may not play as great a role as knowledge of the subject matter. As Lampert (1988) points out, beginning teachers who do not have knowledge of the subject matter to begin with have difficulty selecting appropriate explanations for concepts. This appears to be the case with experienced teachers as well (see, e.g., Smith & Neale, *in press*).

While engaging students with content, teachers should model problem-solving processes that involve judgment and decision making under conditions of uncertainty and diagnose and correct subtle misconceptions in students' thinking (Brophy & Good, 1986); in short, teachers should help students develop metacognitive strategies that will help them continue to learn (Porter & Brophy, 1988). This is especially true for the teaching of ill-structured domains. During modeling, teachers anticipate problems students may have and use examples to help students discuss the potential errors before they make them (Rosenshine & Chapman, 1990).

Another aspect of engaging students in the lesson is actively guided practice for all students (Anderson, 1986; Gersten et al., 1987; Rosenshine, 1988; Rosenshine & Stevens, 1986). Guided practice allows students to transfer new material from their working memory to long-term memory (Rosenshine, 1988). This mandate seems to hold across various populations of students with special needs, including hyperactive mainstreamed adolescents (Schuck et al., 1987) and adolescent learning-disabled students (Zigmond et al., 1986). Guided practice takes at least two forms: teacher-led, small groups (such as cooperative learning groups) and reciprocal teaching (Palincsar & Brown, 1984; Rosenshine & Chapman, 1990). In teacher-directed lessons, teachers should explain tasks clearly and guide students through initial practice items before releasing students to work independently with the content (Brophy & Good, 1986; Rosenshine & Stevens, 1986).

The amount of teacher-led practice may vary depending on the ability of the students (Rosenshine, 1988). For example, slower students may need more review, less presentation, more guided practice, and more independent practice than faster students. Guided practice usually includes rehearsal activities (e.g., answering factual questions, repeating the material, taking selective verbatim notes), elaboration

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and integrative activities (e.g., paraphrasing, creating analogies, reviewing the material and notes), and activities to increase student practice and feedback to the teachers (Rosenshine, 1988). Though the percentages are not always agreed on by researchers, most place student success rates between 75%–100% during guided practice (Conoley, 1988; Rosenshine, 1988). This feedback can help teachers diagnose and correct subtle misconceptions in students' thinking (Brophy & Good, 1986).

Teacher questions are a good way to increase lesson clarity and to check for understanding (Gersten et al., 1987; Harris & Swick, 1985; Rosenshine & Stevens, 1986). Questioning is a way to individualize instruction. Questions should be clear and should yield a student answers even though the answers are not always correct (Brophy & Good, 1986). Basic skills instruction requires frequent, rapidly paced questions, especially in classes with learning-disabled adolescents where short, factual answers encourage student learning (Zigmond et al., 1986). Instruction in higher order thinking skills (e.g., generalizing, evaluating, applying) and complex cognitive content requires a slower questioning speed and longer wait time between questions (Good & Brophy, 1986). Higher level questions may have no single right answer and may be difficult for all but a few of the students. The difficulty level of the question depends largely on the objective; higher level questions are not necessarily better than lower level questions (Brophy & Good, 1986; Hohn, 1986). Research in reading comprehension suggests that during-reading questions, whether teacher- or student-generated, promote "student understanding of content as well as the processes of reading that lead to understanding" (Anthony & Raphael, 1987, p. 23). Not surprisingly, "The quality of the teacher's questioning determines the quality of the pupil's responses" (Wallace, 1986, p. 72).

Around 75% of teachers' questions should elicit correct answers, and most of the remaining questions should encourage students to respond with substantive answers, including incorrect and incomplete answers or even an, "I don't know" (Brophy & Good, 1986). However, recent findings of researchers who work with different cultural groups suggest that expecting questions to have answers is culturally biased (Hollingsworth, personal communication, December 4, 1990). Some cultural groups, such as Navaho children, Hawaiian children, and Filipino children, seem to value less direct, more cooperative discussions not direct answers. To these groups, requiring correct answers leads both teachers and students to devalue their own knowledge. Effective questioning techniques include keeping questions at a level of difficulty where most students can experience a high degree of success in answering and where the pace of instruction can be increased, paying close attention to who is answering questions during discussions and calling on nonvolunteers, and asking students to comment or elaborate on one another's answers (Cotton, 1988; Taylor & Valentine, 1985).

Once teachers call on students, they should wait until the students offer a substantive response, ask for help or clarification, or say, "I don't know." The amount of time a teacher should wait before calling on a different student or asking the same student another question is unknown in most subject areas, but, in science, studies show higher achievement when teachers pause for about three seconds (rather than one second or less). After giving students a chance to answer, teachers should then affirm the correct part of the answer and follow up by giving clues or rephrasing the question; if this does not work, the teacher can give the answer or call on another

student (Brophy & Good, 1986). When students ask relevant or unanswerable questions, teachers should answer or redirect them to the class and incorporate them into the lesson (Wallace, 1986). As students get older, this becomes more important to do (Brophy & Good, 1986).

The teacher must judge the appropriateness of students call outs after a question has been asked. In classes where students are eager to respond, the teacher may have to encourage students to wait until called on. In classes where students are reluctant to respond, the teacher may have to prod students to participate and accept relevant call outs (Brophy & Good, 1986; Hohn, 1986). Findings indicate that, in low-socioeconomic status (low-SES) classes, student call outs usually correlate positively with achievement; in high-SES classes, call outs usually correlate negatively with achievement (Good & Brophy, 1986).

When beginning teachers attempt to construct explanations in response to student questions, they often have difficulty. Their explanations may lack connectedness and may not link related concepts within a lesson or across the curriculum. For instance, Borko and Livingston (1989) found that a beginning mathematics teacher in their study was unable to make smooth transitions back to the concepts and procedures in the lesson after students asked questions. Additionally, novices are less effective in their questioning strategies about children's performance; thus, they are less proficient at using this information about student performance to change their own teaching in response to the students' understanding (Leinhardt & Greeno, 1986).

Teachers should check initial problems within the first 10 minutes of independent practice activities (Conoley, 1988). If they find students are not performing as expected, they should provide not only feedback but reteaching and follow-up assignments designed to ensure mastery of the material (Brophy & Good, 1986; Gersten et al., 1987; Rosenshine & Stevens, 1986). As the teacher proceeds through the lesson, he or she should summarize subparts of the lesson and review the main ideas at the end (Brophy & Good, 1986; Gersten et al., 1987). Systematic reviews (e.g., weekly, monthly) help to solidify previously learned material (Gersten et al., 1987; Rosenshine & Stevens, 1986).

Evaluating student learning. Teachers assess students for various reasons: to gain an understanding of students' knowledge, skills, attitudes, and values; to assign grades to students or to decide which students should be promoted to the next grade level and which should be retained; to make decisions about appropriate content and objectives for students; to determine which students (or subgroups of students) need extra help; and so forth (Anderson, 1986). As Green (1983) reminds us, teachers and students bring *frames of reference* to the teaching and learning situation, which influence the ways individuals interpret classroom life. Frame clashes occur due to differences between teachers' and students' perceptions of a given situation. These clashes may be overt or covert; both can contribute to a teacher's evaluation of student ability and needs. For example, the ways teachers and students communicate, verbally as well as nonverbally, influence teacher perceptions of student ability (Green, 1983). And teachers' task assignments, criteria, standards, sampling strategies, and feedback mechanisms affect their own perceived distribution of student ability (Natriello, 1987). Therefore, it is imperative that teachers be aware of students' frames of reference so that they can better understand student behavior and thus more equitably evaluate student performance. Unfortunately, little is known about how consistent teachers are in their assessment decision making—that is, how

much coherence there is among various aspects of teachers' evaluation systems (e.g., purposes, tasks, standards, feedback; Natriello, 1987). Rudman (1987) comments,

A problem with much of the research cited [concerning testing and teaching functions] is that it dealt with the interests of scholars and measurement specialists rather than with the concerns and perceptions of elementary and secondary school teachers. (p. 84)

One of the ways teachers evaluate student performance is through instructional monitoring. Cotton (1988) defines *monitoring* as "activities pursued by teachers to keep track of student learning for purposes of making instructional decisions and providing feedback to students on their progress" (p. 1). A striking difference between effective and ineffective teachers is that effective teachers maintain consistent accountability procedures of all students' progress with interventions to improve student learning (Brophy & Good, 1986; Porter & Brophy, 1988; Rosenshine, 1988). These findings also appear to hold for teachers of learning disabled adolescents (Zigmond et al., 1986).

During instructional monitoring, competent teachers are clear about their expectations, formats, and other aspects of direction giving, and they hold students accountable for their work. They initiate substantive interactions with students instead of waiting for students to ask for help, provide clarity about when and how students can get help for problems, stress careful and consistent checking of assignments, and suggest what students might do when they complete their assigned tasks (Brophy & Good, 1986; Cotton, 1988). Competent teachers look for completion and accuracy in student work, give specific and timely feedback, and encourage student self-monitoring procedures, such as checklists (Rosenhine & Chapman, 1990). Competent teachers evaluate collaborative learning groups for overall performance and individuals for their own learning (Ward, 1987).

Another form of student monitoring is homework. When they give homework as a form of independent practice, competent teachers ensure that it is: appropriate for the ability and maturity level of the student, closely tied to the subject matter currently being studied in the classroom, coordinated with other teachers, given frequently as a means of extending student practice time with new material, clearly understood by students and parents, monitored by parents, quickly checked and returned to students, and graded and commented on (Butler, 1987; Cotton, 1988; Foyle & Bailey, 1986; Jongsma, 1985).

The major theme currently running through the evaluation literature is that multiple sources of evidence give a more accurate picture of student progress than does a single source. Thus, conventional measurement instruments (e.g., standardized, multiple-choice tests) should be supplemented with alternatives such as observations of students (in person, via VCR and/or audiotapes), work samples (e.g., student constructions, papers), debriefing (i.e., students' own reconstructions of prior learning experiences), role playing and simulation games, checklists, case studies and anecdotal records, interviews, questionnaires, and opinionnaires (Cryan, 1986; Sia & Sydnor, 1987).

Summary of findings in interactive teaching tasks. Competent teachers create classrooms in which students want to learn. They develop empathy, rapport, and personal interactions with students. They maximize time spent actively engaged in worthwhile academic activities and minimize time spent waiting for activities to get started, making transitions between activities, sitting with nothing to do, or engaging

in misconduct. And they find ways to establish and maintain rules and routines that are fair and appropriate to students. Beginning teachers may have difficulty creating learning-filled classrooms due to undeveloped schemata for “reading” a class environment and for establishing rules and routines.

Competent teachers arrange the physical and social conditions (e.g., physical configuration of desks and curricular materials, grouping of students) in ways that are conducive to learning and that fit the academic task. They use appropriate ways to represent and present subject matter; these ways range from teacher directed to student directed. They assess student needs and adapt instruction to meet these needs. They focus attention on the relevant and important aspects of the instructional materials and activities. They communicate clear expectations to students. They relate new learning to students’ previous learning and experiences. They model learning to help students develop metacognitive strategies. They provide opportunities for students to interact with the content (e.g., answering factual and integrative questions, taking selective notes, creating analogies). And they maintain consistent accountability procedures of all students’ progress with interventions to improve student learning. Beginning teachers, on the other hand, may have difficulty executing all of these tasks smoothly due to the lack of well-developed instructional routines and a meager understanding of content-specific pedagogy.

Postactive Teaching Tasks

Competent teachers reflect on their own teaching and students’ responses in order to find out what was successful and what was unsuccessful in order to refine their own teaching practices (Feiman-Nemser, personal communication, January 8, 1991; Porter & Brophy, 1988; Schön, 1987). Reflection occurs during interaction with students (e.g., gathering information from students’ comments to determine whether or not they have understood an explanation the teacher has just given) as well as during periods when students and teacher are not interacting. Competent teachers use multiple forms of assessment, such as those described earlier, not only to evaluate students but also to find out if their teaching methods are working (Taylor & Valentine, 1985). For example, teachers may mentally replay a lesson or interaction with a student, actually videotape classroom life and review it later, ask a colleague to observe and then discuss the lesson afterwards, keep a journal of thoughts and feelings, and so forth.

The distinguishing feature between expert and novice teachers seems to be the inconsistent focus novices provide concerning their practice and their more intuitive rather than empirical comments about the teaching and learning process (Hollingsworth, personal communication, December 4, 1990). In Borko and Livingston’s (1989) study of expert/novice differences in teaching a mathematics lesson, novices’ postlesson reflections seemed to depend more on the events that occurred during the lesson than did the experts’. The novices reflected concerns about the clarity of their explanations and examples, their use of the chalkboard, their ability to respond to student questions, and students’ participation in the lesson. Experts focused their comments on student understanding of the material and on the events that they deemed noteworthy in the lesson; they rarely mentioned classroom management issues and their own effectiveness. Borko and Livingston’s (1989) findings are similar to those of Carter, Sabers, Cushing, Pinnegar, and Berliner (1987).

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Such descriptions of how novices reflect and what they think about after the lesson is over are often fodder for charges that beginning teachers are unable to reflect on their own practice and that of other teachers (Ross, 1989; Simmons, Sparks, Starko, Pasch, Colton, & Grinberg, 1989; Ferguson, 1989; Zeichner & Liston, 1985). However, this may be due to methodological problems; that is, the instruments used to collect data on reflection may measure nothing more than verbal facility (Kagan, 1990). Or it may be that the questions asked of beginners to probe their thoughts about their own practice may be the wrong ones to ask (Hollingsworth, personal communication, December 4, 1990). Pugach (1990) argues that beginning teachers must be placed into positions where they have to reflect on problems of practice which are of concern to them, such as developing relationships with students.

We have little information about the relationship between competent teaching and performance on other postactive tasks of teaching, such as keeping in touch with the subject-matter field and other developments in education through professional journals, professional organizations, and advanced education courses or interacting with colleagues to coordinate teaching plans and school activities. The assumption is that these other postactive tasks somehow both improve teaching effectiveness and define competent teaching.

Summary of postactive teaching tasks. Competent teachers evaluate their own teaching effectiveness by reflecting on their own actions and student responses in order to improve their practice. Beginning teachers do reflect on their practice, but their reflections appear to be less focused than experienced teachers' reflections. To the beginning teacher, everything seems important and worthy of comment. Beginning teachers may have difficulty zeroing in on what is instructionally important for reflection because they have not developed schemata for organizing the enormous quantities of information gathered during classroom experiences, or it may be that the questions used to elicit reflective answers are inappropriate. Reflection may help the beginning teacher develop schemata for making meaning out of classroom experiences.

Making Sense of the Literature

Having presented pictures of what research on teaching tells us effective teachers know and do and what research on learning to teach tells us beginning teachers know and do, those of us charged with developing sound assessments for teacher licensure are left with the task of deciding what competent beginning teachers should know and do. We can no longer look just to the effective teaching literature, as so many performance-based teacher assessment programs have done in the past (for a critique of these systems, see, e.g., Macmillan & Pendlebury, 1985; Shulman, 1986; Tyson-Bernstein, 1987). Nor can we simply focus our attention on what the learning-to-teach literature says about beginning teachers. Both of these literature banks have shortcomings, such as the omission of teachers' voices in the research; few empirically demonstrated relationships between student outcomes and teacher actions; and a lack of generalizability across subject matter, grade level, students, or classroom culture. Rather, we must weigh findings from both bodies of literature and, through discussions with practitioners and further research, decide what we mean by competent beginning teaching.

My own synthesis of the literature leads me to offer the following expectations for beginning teachers. Beginning teachers should enter the first year of teaching with:

- Knowledge of the subject matter they will teach;
- The disposition to find out about their students and school, and the ethnographic and analytic skills to do so;
- Knowledge of strategies, techniques, and tools for creating and sustaining a learning community, and the skills and abilities to employ these strategies, techniques, and tools;
- Knowledge of pedagogy appropriate for the content area they will teach; and
- The disposition to reflect on their own actions and students' responses in order to improve their teaching, and the strategies and tools for doing so.

Given the need for time at the beginning of the school year to learn about a new school culture and students, formal evaluation of competence probably should not begin until after the middle of the first year of guided, full-time teaching. At the time of formal summative evaluation for licensure, we should expect beginning teachers to be able to:

- Plan lessons that enable students to relate new learning to prior understanding and experiences;
- Develop rapport and personal interactions with students;
- Establish and maintain rules and routines that are fair and appropriate to students;
- Arrange the physical and social conditions in the classroom in ways that are conducive to learning and that fit the academic task;
- Represent and present subject matter in ways that enable students to relate new learning to prior understanding and that help students develop metacognitive strategies;
- Assess student learning using a variety of measurement tools and adapt instruction according to the results; and
- Reflect on their own actions and students' responses in order to improve their teaching.

It is not within the scope of this article to describe the performance of beginning teachers on current assessments built to measure some of the expectations I have listed above, although indications are that many beginners do not enter teaching able to meet the expectations (see, e.g., Estes, Stansbury, & Long, 1990). Instead, I offer my synthesis as a map for deliberations regarding what should be assessed for teacher licensure.

Licensure is instituted to protect the public from harm; therefore, it is critical that we define competent beginning teaching in a way that satisfies this charge. If teachers come to the teaching/learning enterprise with an inadequate knowledge base—that is, they are unable to perform the preactive, interactive, and postactive tasks of teaching in an effective manner—they place their students at risk of educational failure. Teacher education and induction programs must be restructured to ensure that beginners have an adequate knowledge base before they take on full-time responsibility for students. (Restructuring issues are discussed more fully in other publications [e.g., Bartell, 1990; Lieberman, 1988; Logan, Ellett, & Naik, 1990]). In summary, licensure assessments must act as a catalyst to improve teaching, not as just a reflection of the status quo.

As one might expect, a review such as this raises more questions than it answers: How well must beginning teachers be able to execute the tasks of teaching; that is,

what do exemplars of competent beginning teaching look like? How do competent beginning teachers perform tasks of teaching in areas not well-covered in current research, such as professional development and interaction with colleagues? How does competent performance differ across teaching philosophies and models? How does competent teaching differ across subject matter? Future studies might begin with findings described in this article and delve more deeply into specific task domains to determine what competent beginning teaching looks like. Other studies might look more closely at what teacher assessment systems assess in reality—not just on paper—and see how closely they reflect the definition of beginning teacher competence suggested in this review.

As the data base on beginning teachers and effective teaching becomes more intertwined through research and deliberation, we will come closer to answering my original query: What is competent beginning teaching?

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